

WHAT IS CLAIMED IS:

1. A stress/strain relief process for a flexible, multilayered web stock comprising:

providing a multilayered web stock including at least one layer to be treated, the at least one layer to be treated having a coefficient of thermal expansion significantly differing from a coefficient of thermal expansion of another layer;

passing the multilayered web stock over and in contact with a first wrinkle-reducing roller that spontaneously creates transverse tension stress in the at least one layer to be treated;

heating at least the at least one layer to be treated above a glass transition temperature T_g of the at least one layer to be treated to thereby create a heated portion of the at least one layer to be treated, a portion of the web stock in proximity to the heated portion of the at least one layer to be treated thereby becoming a heated portion of the web stock;

inducing curvature in the heated portion of the web stock; and

cooling the heated portion of the web stock at said curvature.

2. The process of claim 1, wherein heating comprises providing at least one heat source.

3. The process of claim 2, wherein providing at least one heat source includes positioning an infrared lamp in proximity to the web stock, and placing a reflector around the infrared lamp to focus energy emitted by the infrared lamp into a heating line on a surface of the web stock.

4. The process of claim 1, wherein the first wrinkle-reducing roller is a concave or reversed crown roller.

5. The process of claim 4, wherein the first wrinkle-reducing roller has a center diameter of between about 1 and about 4 inches.

6. The process of claim 4, wherein the first wrinkle-reducing roller has a differential diameter between ends of the roller and a center of the roller of from about 0.002 to about 0.1 inch.

7. The process of claim 1, wherein the first wrinkle-reducing roller is a flexible spreader roller.

8. The process of claim 7, wherein the first wrinkle-reducing roller has a diameter of between about 0.8 and about 2 inches.

9. The process of claim 1, wherein the first wrinkle-reducing roller is located in the process prior to the heating step.

10. The process of claim 1, wherein the first wrinkle-reducing roller is located in the process subsequent to the heating step.

11. The process of claim 1, further comprising passing the multilayered web stock over and in contact with a second wrinkle-reducing roller that spontaneously creates transverse tension stress in the at least one layer to be treated, wherein the first wrinkle-reducing roller is located in the process prior to the heating step, and the second wrinkle-reducing roller is located in the process subsequent to the heating step.

12. The process of claim 11, wherein the first wrinkle-reducing roller and the second wrinkle-reducing roller are the same.

13. The process of claim 11, wherein the first wrinkle-reducing roller and the second wrinkle-reducing roller are different.

14. The process of claim 1, wherein inducing curvature includes moving the web stock over an arcuate portion of an outer surface a processing treatment cylinder.

15. The process of claim 1, wherein cooling comprises directing a cooling stream at the heated portion of the web stock.

16. A stress/strain relief process for a flexible, multilayered web stock including:

providing a multilayered web stock including at least one layer to be treated, the at least one layer to be treated having a coefficient of thermal expansion significantly differing from a coefficient of thermal expansion of another layer;

providing a first wrinkle-reducing roller;

moving the web stock toward the first wrinkle-reducing roller;

passing the multilayered web stock over and in contact with the first wrinkle-reducing roller to spontaneously create transverse tension stress in the at least one layer to be treated;

providing a processing tube having an arcuate outer surface;

moving the web stock toward the processing tube;

providing a heat source at the processing tube; and

heating the web stock above a glass transition temperature T_g of the at least one layer to be treated.

17. The process of claim 16, wherein the at least one layer to be treated includes a charge transport layer.

18. The process of claim 16, wherein providing the web stock includes providing a roll of web stock and the method further comprises unwinding the web stock from the roll with the at least one layer to be treated facing outwardly.

19. The process of claim 16, wherein the first wrinkle-reducing roller is a concave or reversed crown roller, or a flexible spreader roller.

20. The process of claim 16, wherein the first wrinkle-reducing roller is located in the process prior to the processing tube in a processing direction.

21. The process of claim 16, wherein the first wrinkle-reducing roller is located in the process subsequent to the processing tube in a processing direction.

22. The process of claim 16, further comprising:
providing a second wrinkle-reducing roller;
moving the web stock toward the second wrinkle-reducing roller;
passing the multilayered web stock over and in contact with the second wrinkle-reducing roller to spontaneously create transverse tension stress in the at least one layer to be treated;

wherein the first wrinkle-reducing roller is located in the process prior to the processing tube in a processing direction, and the second wrinkle-reducing roller is located in the process subsequent to the processing tube in a processing direction.

23. The method of claim 16, wherein the web stock is passed over and contacted with the first wrinkle-reducing roller such that the at least one layer to be treated faces an outer surface of the first wrinkle-reducing roller.

24. The method of claim 16, wherein heating the web stock comprises substantially instantly elevating a localized temperature of the at least one layer to be treated at the processing tube.

25. The method of claim 24, wherein elevating a localized temperature of the at least one layer to be treated includes heating the at least one layer to between about 5°C and about 25°C above a glass transition temperature T_g of the at least one layer.

26. The method of claim 16, wherein providing a heat source includes providing an infrared lamp and providing a reflector, the infrared lamp extending over an entire width of the web stock.

27. The method of claim 26, wherein providing a reflector comprises a providing a hemi-ellipsoidal reflector.

28. The method of claim 27, wherein providing an infrared lamp includes positioning the infrared lamp at a focal point of the reflector such that substantially all infrared radiant energy emitted from the lamp is reflected and converges at a second focal point of the reflector in a heating line of sufficient width to cover substantially an entire width of the web stock.

29. The method of claim 16, further comprising cooling the at least one layer after heating.

30. The method of claim 29, wherein cooling comprises lowering a temperature of the at least one layer by at least about 20°C below the T_g of the at least one layer.